

## What is Claimed is:

1. A remote control device for a set-top box with a two-way transmission function, comprising:
  - a set-top box having a transceiver device which includes a first receiving unit and a first transmitting unit; and
  - a handheld device including an input device, a second receiving unit corresponding to the first transmitting unit of the set-top box, a second transmitting unit corresponding to the first receiving unit of the set-top box and a display device;wherein the second transmitting device transmits a control signal generated by the input device to the first receiving unit of the set-top box, the set-top box receiving the control signal and processing corresponding control functions, and generating a confirmation signal which is transferred to the first transmitting unit for transmitting to the handheld device, the second receiving unit of the handheld device receiving the confirmation signal, and the display device displaying the confirmation signal.
2. The remote control device of claim 1, wherein the receiving units and the transmitting units transmit signals through a transmission medium which is selected from a group consisting of infrared transmission and radio frequency transmission.
3. The remote control device of claim 1, wherein the display device is selected from a group consisting of indication lights, multi-stage LED, liquid crystal display panels, and touch display devices.
4. The remote control device of claim 1, wherein the input device is selected from a group consisting of keyboards, touch panels and touch display devices.
5. The remote control device of claim 1, wherein the first receiving unit and the first transmitting unit of the set-top box are separated and independent.
6. The remote control device of claim 1, wherein the second receiving unit and the second transmitting unit of the handheld device are separated and independent.
7. The remote control device of claim 1, wherein the first receiving unit and the first transmitting unit of the set-top box are coupled together.
8. The remote control device of claim 1, wherein the second receiving unit and the second transmitting unit of the handheld device are coupled together.
9. A remote controlling method for a set-top box with a two-way transmission function, comprising steps of:

a. entering at least one control signal from an input device of a handheld device, and transferring the control signal to a second transmitting unit of the handheld device;

b. transmitting the control signal entered from the input device through the second transmitting unit of the handheld device to a first receiving unit of a set-top box;

5 c. receiving the control signal transmitted from the second transmitting unit of the handheld device by the first receiving unit of the set-top box, and the control signal being received and processed by a processing unit of the set-top box to output a confirmation signal which is transferred to a first transmitting unit of the set-top box;

10 d. transmitting the confirmation signal from the first transmitting unit of the set-top box to a second receiving unit of the handheld device; and

e. receiving the confirmation signal transmitted from the first transmitting unit of the set-top box by the second receiving unit of the handheld device, and displaying the received confirmation signal on a display device of the handheld device.